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Claims

1. A wireless communication unit (300) comprising a linearised transmitter (325) having:
 - 5 a forward path for routing a signal to be transmitted;
 - a power amplifier (324) for transmitting a linearised radio signal;
 - a feedback loop, operably coupled to the power amplifier (324) and the forward path, comprising a loop adjustment function (442), wherein the forward path and feedback loop comprise quadrature circuits; and
 - 10 a processor (322) for applying a first training signal to a first quadrature circuit loop for routing through the forward path, power amplifier and feedback path to determine at least one first parameter setting of the loop adjustment function (442),
- 15 the wireless communication unit (200) characterised by:
 - said processor (322) applying a second training signal to a second quadrature circuit loop to determine at least one second parameter setting of the loop adjustment function (442).
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2. The wireless communication unit (200) according to Claim 1, wherein the wireless communication unit (200) is further characterised by said first training signal and said second training signal having substantially the same signal parameters, for example where they are phase training signals.
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3. The wireless communication unit (200) according to Claim 2 further characterised by the loop adjustment function being a phase shifter (442) for adjusting a
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phase shift in the first and second quadrature circuit loops.

4. The wireless communication unit (300) according
5 to Claim 3, wherein the wireless communication unit (300)
is further characterised by a phase calculation function
(460), operably coupled to said phase shifter (442), to
calculate a phase shift in each of the first and second
quadrature circuit loops, thereby ascertaining an
10 imbalance therebetween.
5. The wireless communication unit (300) according
to any preceding Claim, wherein the wireless
communication unit (300) is further characterised by said
15 processor (322) applying said first training signal to
the linearised transmitter prior to applying said second
training signal.
6. The wireless communication unit (300) according
20 to any preceding Claim, further characterised by the
linearised transmitter being a Cartesian feedback
linearised transmitter such that said adjustment is
applied to a real-time feedback loop.
- 25 7. The wireless communication unit (300) according
to any preceding Claim, wherein said wireless
communication unit is capable of operation on a TETRA
communication system.
- 30 8. The wireless communication unit (300) according
to any preceding Claim, wherein said wireless
communication unit is a subscriber unit or a base
transceiver station.

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9. A linearised transmitter integrated circuit (320) comprising:

- 5 a linearised transmitter for transmitting a linearised radio signal, and
- a forward path comprising quadrature circuits for routing a signal to be transmitted and for operable coupling to a power amplifier (324) for transmitting a linearised radio signal;
- 10 a feedback loop, operably coupled to the forward path and for operable coupling to an output of a power amplifier (324), wherein the feedback loop comprises a loop adjustment function (460), and quadrature circuits; and
- 15 a processor (322), operably coupled to the feedback loop for applying a first training signal to a first quadrature circuit loop in the linear transmitter integrated circuit to be routed through the forward path, power amplifier (324) and feedback path to determine at
- 20 least one first parameter setting of the loop adjustment function (460),
- the linearised transmitter integrated circuit (320) characterised by:

- 25 said processor (322) applying a second training signal to a second quadrature circuit loop in the linear transmitter integrated circuit to determine at least one second parameter setting of the loop adjustment function (460).

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10. A method of training a linearised transmitter (325) having a forward path, a power amplifier (324) and a feedback loop comprising a loop adjustment function, wherein the forward path and feedback loop comprise
5 quadrature circuits; the method comprising the steps of:
 applying a first training signal to be routed through a first quadrature circuit loop of the forward path, power amplifier and feedback path; and
 determining at least one first parameter setting
10 for the loop adjustment function based on the first training signal,
the method characterised by the steps of:
 applying a second training signal to a second quadrature circuit loop of the forward path, power
15 amplifier and feedback path; and
 determining at least second parameter setting for the loop adjustment function based on the second training signal.
- 20 11. The method of training a linearised transmitter (325) according to Claim 10, the method further characterised by the step of adjusting said loop adjustment function based on a determination made on the first training signal and a determination made on the
25 second training signal.
12. A storage medium storing processor-implementable instructions or data adapted to perform the steps of method Claim 10 or Claim 11.
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